

## Introduction

IAEA and UK transport regulations require consignors of radioactive materials to have in place emergency response arrangements for the event of a transport incident. RADSAFE fulfils this requirement for its members, who include the UK MOD (Ministry of Defence) and civil nuclear power operators.

## RADSAFE

- is a UK mutual support company that provides an emergency response in the event of a road/rail transport accident involving radioactive materials belonging to a member.
- provides swift radiation protection advice and support to the emergency services.

## RADSAFE response levels

- Level 1: The Civil Nuclear Constabulary's Communications Centre (CC) receives notification of an incident, usually from the police, via the RADSAFE emergency telephone number. The CC provides generic radiological protection advice and alerts the Level 2 and Level 3 responders.
- Level 2: The RADSAFE member nearest to the incident provides radiological protection advice, by telephone, to the emergency services and attends the scene (nominally within 2 hours) to provide further advice and support.
- Level 3: The consignment owner provides specific advice to the Level 2 responder and to the emergency services and attends the scene to retrieve the consignment and carry out any remediation necessary.

## Dstl's Role

Dstl forms part of the RADSAFE emergency response cover on behalf of the MOD and could be requested to respond at Level 2.

## Aim and Objectives of the Exercise

### Aim

Dstl undertook an exercise on its Porton Down Range in Wiltshire in December 2009 to test its RADSAFE Level 2 response to a road traffic accident involving radioactive material.

### Objectives

To test:

- The notification (alerting) procedure.
- Communications.
- Procedures and responses.
- Specialists in their roles.
- Interfaces with other agencies, particularly the emergency services.
- Support to the recovery phase.



### Exercise Scenario

An accident scene was set up on a road on the Dstl Porton Down Range, to simulate a road traffic accident. The key aspects of the scenario were:

- a van collision with a car;
- two metal drum containers of simulated radioactively contaminated soft waste (gloves, coveralls, etc) being transported by the van;
- one drum being thrown out through the rear doors of the van and its contents spilling;
- no fire or hazardous chemicals being present;
- a van driver and two casualties in the car.

A number of Americium 241 smoke detectors (each 2.2 MBq) were placed amongst the spilled material to simulate plutonium contamination.

### Description of the Exercise

The van driver alerted the CC, who instigated a RADSAFE callout to Wiltshire Police and Dstl, the nearest RADSAFE responders.

The CC also informed the consignor (package owner).

Wiltshire Police called out WFRS (Wiltshire Fire & Rescue Service) and the Ambulance Service.

At the accident scene, the police set up an outer cordon on the approach roads at 100m and WFRS set up an inner cordon at 50m. WFRS took the role of lead emergency organisation.

Communications links were quickly established between the emergency services at the scene, the Dstl response team and the consignor.



The Dstl response team consisted of two personnel: a Duty Health Physicist and an Environmental Monitor.

On arrival at the scene, the Dstl team had a briefing with the emergency services. They entered the inner cordon, wearing appropriate personal and respiratory protective equipment (coveralls, gloves, overboots and facemasks) and monitored the WFRS crew and casualties. For exercise purposes, low-level contamination was 'detected' on the WFRS crew, who exchanged their contaminated suits for fresh coveralls. The WFRS crew and casualties were given clearance to exit the inner cordon and the casualties were handed over to the ambulance crew.

The monitoring carried out by the Dstl team comprised:

- Radiation and contamination surveys of the vehicles and surrounding area;
- An air sampler being set up 5m downwind of the vehicles.

This allowed the extent of the contaminated area to be established and the hazard to be determined.

The Dstl team were careful not to disturb any of the radioactive material. No attempt was made to retrieve or re-package the material, since this is the responsibility of the consignor, who is equipped for the task.

The consignor's response team arrived and retrieved the radioactive material and the containers. .



### Assessment of Dstl's Response

An objective assessment, led by an independent internal assessor, was made of Dstl's response.

### Notification and Initial Communications

Notification (to Dstl) and initial communications between Dstl, the emergency services and the consignor were made within 15 minutes of the alert to the CC. Information provided by the CC and the consignor was quickly assimilated by the Dstl team, who correctly identified the nature of the hazard and provided appropriate initial advice on personal protection to the emergency services.

### Communications and Interfaces

Good communications between all parties occurred throughout. There was a good rapport between Dstl and the emergency services.

At all stages, there was accurate and timely information exchange between parties and action plans were quickly agreed.

### Dstl Response Team

The Dstl team were judged to have provided a highly professional and technically justified response, including:

- Selection of suitable monitoring instruments.
- Personal and area monitoring.
- Correct assessment of the hazard
- Appropriate advice to the emergency services.

### Support to Recovery Phase

The consignor's response team were well briefed by Dstl and the handover proceeded smoothly.

### Key Points

The exercise highlighted the following areas for improvement:

- Clear demarcation should be maintained between the Duty Health Physicist and Environmental Monitor roles. The Health Physicist should remain outside contaminated areas, in order to focus on communications tasks and to maintain an overview of the situation.
- Contamination monitoring of personnel should be conducted at the inner cordon exit, in accordance with fire service procedures.
- To minimise risk of exposure, area monitoring should be restricted to that necessary to determine the extent of contamination; more detailed characterisation is a responsibility of the consignor's response team, which will be specifically equipped for the hazard.

## Conclusions

1. The exercise was a successful demonstration of Dstl's ability to respond to a transport accident involving radioactive material, meeting the aim of testing its RADSAFE response. All the specific objectives were met.
2. Valuable lessons were learned and these have been emphasised in training sessions.
3. The Dstl Porton Down Range proved to be an excellent facility for undertaking this type of exercise, particularly because the scenario and accident scene were subsequently available to provide a training event for Dstl staff who had not taken part in the exercise.
4. The use of radioactive sources added an extra element of realism to the scenario.